

## TRAY FOR THE TRANSPORTATION OF PRODUCTS

This invention refers to a tray for the transportation of products, which is extremely resistant  
5 and can be transported with a substantially flat configuration.

### BACKGROUND OF THE INVENTION

10 Cardboard trays for the transportation of products, such as fruit, are formed by a sheet equipped with a series of folding lines, which define the bottom of the tray, the headers and the sides.

An important characteristic of these trays is  
15 that they must be extremely resistant so as to tolerate the transportation and bear a great capacity. Therefore, some of the trays that are currently known comprise a top flap over each header, which extends horizontally towards the inner area of the tray.

20 One drawback which present some of the trays that are currently known is their inability to be folded once they are assembled, which means they have to be assembled immediately before their use or transported already assembled but empty. The latter option is a serious  
25 inconvenience as trays take up a lot of space.

So as to solve these inconveniences, different trays for the transportation of products have been designed, such as, for example, the one described in the application for Spanish utility model U9403323. This  
30 document describes a tray equipped with said top flaps on the headers and which comprises inclined folding lines on its sides that allow the folding of the tray, adopting a substantially flat configuration. Thanks to this substantially flat configuration, the tray can be  
35 transported empty taking up very little space.

However, the tray described in this utility model entails the inconvenience that its resistance is not appropriate. Thanks to the presence of the top flaps, the headers are very resistant, but the presence of inclined  
5 folding lines on the sides makes it less resistant.

#### DESCRIPTION OF THE INVENTION

The tray for the transportation of products of  
10 the invention manages to solve the aforementioned inconveniences, and presents other advantages that will be described hereunder.

The tray for the transportation of products of the invention is formed by a sheet provided with a series  
15 of folding lines that define:

- the bottom of the tray;
- a couple of headers;
- a couple of sides;
- a polygonal column on each of the corners; and
- 20 - two top flaps, each of which extends horizontally from one of the headers to the inner area of the tray;

the tray also comprises inclined folding lines that allow the folding of the headers and the sides on the  
25 bottom of the tray;

and it is characterised in that said inclined folding lines are located on the headers and on said top flaps.

Thanks to this characteristic, the tray of the  
30 invention is very resistant and, at the same time, can be transported in a substantially flat position, thus taking up very little space.

Advantageously, each header and top flap comprise two inclined folding lines, that extend from the  
35 bottom corners of the header substantially to the centre

of the top part of the same.

In order for the tray to be even more resistant, each top flap comprises a couple of side flaps that are attached to the outer part of the sides, thus avoiding  
5 that the side becomes detached if subjected to excessive tensile force. Furthermore, it allows a reduced internal thickness between the columns and the sides, which facilitates the folding of the tray for its transportation.

10 Preferably, each top flap comprises a couple of additional folding lines that extend from the corners in contact with the headers towards the inner area of the tray, in the assembly position.

In order to make the tray of this invention even  
15 more resistant, each column could present an orifice on the top flaps through which an reinforcement element could be inserted in said columns.

If so desired, each orifice can comprise an articulated tongue, which is accommodated inside the  
20 column after inserting said reinforcement element. Thanks to this tongue, the inner side of the orifice which the tongue is articulated to, becomes much more resistant.

According to a preferred embodiment, said columns are triangular and the side defined by the  
25 hypotenuse of said triangle comprises a vertical folding line.

According to two alternative embodiments, said reinforcement element is a triangular plaque or prism formed by a laminar element.

30 In order for said sides to also have the appropriate resistance, said sides have a double thickness.

#### BRIEF DESCRIPTION OF THE DRAWINGS

So as to enable a better understanding of the terms stated above, a series of drawings have been included to, schematically and illustratively, represent a practical case of the embodiment.

5           Figure 1 is a plan view of a fourth of the sheet that forms the tray of the invention when unfolded;

          Figure 2 is a perspective view of one of the corners of the tray of the invention during assembly;

          Figure 3 is a perspective view of one of the  
10 corners of the tray of the invention in its upright usage position;

          Figure 4 is a perspective view of a corner of the tray of the invention that comprises an reinforcement element in the columns of the same, in accordance with a  
15 first embodiment;

          Figure 5 is a perspective view of a corner of the tray of the invention, in accordance with a second embodiment, including an orifice with an articulated tongue;

20           Figure 6 is a perspective view of a corner of the tray of the invention, that comprises an reinforcement element in the columns of the same, in accordance with said second embodiment; and

          Figure 7 is a plan view of one of the halves of  
25 the tray of the invention in its substantially flat transportation position.

#### DESCRIPTION OF A PREFERRED EMBODIMENT

30           As can be appreciated in figure 1, the tray of the invention is formed by a sheet, preferably made of cardboard, that comprises a plurality of folding lines which, once assembled, define a bottom 1, a couple of sides 2, a couple of headers 3, a triangular column 4 on each  
35 corner of the tray, and a top flap 6 on each header, each

said top flap 6 extends horizontally towards the inner area of the tray.

Furthermore, according to the embodiment presented, the represented tray also comprises a side flap 8 on each side of the top flaps 6 and orifices 10 located on the top flaps 6 in correspondence with columns 4. In accordance with the represented embodiment, the width of the side flaps 8 is substantially wider than the width of the top flaps 6. These orifices 10, as will be described below in depth, are used to insert elements for reinforcement 11, 12 in columns 4.

The side of the columns defined by the hypotenuse of said triangle comprises a vertical folding line 5 that allows the folding of the tray once assembled, together with the folding lines described hereunder. If the columns 4 are not triangular, there must be a vertical folding line that enables the folding of the tray.

Headers 2 also comprise inclined folding lines 7, 9 to enable the folding of the tray once assembled. The tray, once assembled and folded, has a substantially flat configuration (represented in figure 6) that is ideal for its transportation when empty, taking up very little room.

From the unfolded sheet shown in figure 1, in the first place the columns 4 are erected, sticking one of their sides to the headers 2. Subsequently, the sides 3, which have a double thickness, are stuck to said columns 4, and the top flaps 6 are folded towards the headers, adopting their definitive horizontal position. Finally, side flaps 8 are stuck on the outer area of the sides 3.

In the case of the represented embodiment, column 4 is formed on the headers 2. However, if so desired, the columns 4 could evidently also be formed on the sides 3.

Once assembled, the tray presents the configuration represented in figure 3. In order to increase

the resistance of the tray of the invention, an reinforcement element 11 can be inserted in each column 4 through an orifice 10. Figure 4 includes the representation of an reinforcement element with a plaque shape 11 and, in  
5 this case, the orifice 10 is shaped like a slot.

Alternatively, as represented in figure 5, the reinforcement element could be shaped like a triangular prism, which is inserted in column 4 through a triangular orifice 10. In this case, said triangular prism is formed  
10 by a laminar element, that can be transported unfolded taking up very little room.

It is important to state that it is not essential to insert the elements for reinforcement 11, 12 in columns 4, given that the tray of the invention is  
15 already extremely resistant even without said elements for reinforcement 11, 12. Evidently, if the tray is to be used without said elements for reinforcement 11, 12, orifices 10 are not needed in correspondence with the columns.

As can be seen on figure 5, the orifice 10 can  
20 comprise an articulated tongue 13 that is accommodated inside the column when the reinforcement element 12 is inserted. Although this is not essential, the presence of the tongue 13 is designed for use with triangular orifices 10.

25 As aforementioned, the tray of the invention can take on an assembled and folded configuration, as can be appreciated in figure 6. To achieve this, each header 2 and its corresponding top flap 6 comprise two inclined folding lines 7 that extend from each bottom corner of the header 2  
30 substantially to the top centre of the top flap 6, as can be appreciated in the figures. Furthermore, each top flap 6 also comprises a couple of additional inclined folding lines 9 that extend from the corners in contact with the headers 2 to the inner area of the tray, in the assembly  
35 position.

The presence of these folding lines 7, 9 and of the vertical folding lines 5 of the columns 4 allow headers 2 and sides 3 to be folded on the bottom 1, with which the tray acquires a substantially flat configuration.

5           Thus, the tray of the invention can be transported taking up very little room, as it can be placed in its usage position by simply unfolding the headers 2 and the sides 3 and, if required, inserting the elements for reinforcement 11, 12 in the corresponding orifices 10.

10           Although this refers to a specific embodiment of the invention, obviously a person skilled in the art will know that the tray for the transportation of products described herein may undergo many variations and modifications and that all the details mentioned may be  
15 replaced by others that are technically equivalent, without departing from the scope of protection defined by the claims attached.